

AMENDMENTS TO THE CLAIMS

Please amend the claims as follows.

1-24. (Cancelled)

25-31. (Withdrawn)

32. (New) A computer system for speech communications with one or more applications, comprising:

an automatic speech recognition system (ASR) for recognizing speech inputs from a user;

a speech generation system for providing speech to be delivered to the user;

a database storing data speech constructs configured to carry out a conversation for use by the automatic speech recognition system and the speech generation system, the data speech constructs comprising prompts and grammars stored in notation independent form;

a controller for controlling the automatic speech recognition system, the speech generation system and the database; and

a voice user interface provided between the user and one or more applications; and

at least one further user interface, the further user interface comprising a non-voice user interface;

wherein the controller is configured to manage synchronous conversations between the user and the computer system across a voice channel provided by the voice user interface and at least one non-voice channel provided by the at least one further user interface.

33. (New) The computer system according to claim 32, wherein the at least one non-voice interface comprises a World Wide Web (www) interface and a Wireless Application Protocol (WAP) interface.

34. (New) The computer system according to claim 32, wherein the controller comprises a workflow manager for managing transitions between workflow components stored in the database.

35. (New) The computer system according to claim 34, wherein the components managed by the workflow manager comprise:

- a prompt component comprising a dialogue spoken to a user;
- actions representing an action performed as a consequence of user dialogue;
- parameters comprising information to be elicited from a user;
- words comprising possible values for parameters; and
- phrases comprising a set of related prompts and possible user responses.

36. (New) The computer system according to claim 35, wherein the prompt component comprises static prompts and dynamic prompts.

37. (New) The computer system according to claim 32, wherein the database stores mappings between keywords and system functionality.

38. (New) The computer system according to claim 32, wherein the database stores statistical information automatically adapting automatic speech recognition system probability profiles.

39. (New) The computer system according to claim 32, wherein the computer system automatically generates a spoken language interface personality based on user demographics.

40. (New) The computer system according to claim 32, wherein the controller comprises a hybrid rule based and stochastic natural language processing engine configured to automatically recognize user responses or dynamically generate system prompts based on conversational context.

41. (New) The computer system according to claim 32, wherein the data speech constructs stored in the database comprise constructs and user utterances for which the automatic speech recognition system listens, wherein the data speech constructs are stored in grammar independent form.

42. (New) The computer system according to claim 41, wherein the database further stores prompts or recorded voice delivered by the automatic speech generator to the user.

43. (New) The computer system according to claim 41, wherein the database further stores workflow descriptors comprising workflow descriptors for one or more applications or one or more processes.

44. (New) The computer system according to claim 32, further comprising a personalization unit for storing individual user preferences and profiles.

45. (New) The computer system according to claim 32, further comprising an adaptive learning unit, the adaptive learning unit being responsive to historical transactions between the spoken language interface and a given user to automatically customize the dialogue with the given user.

46. (New) The computer system according to claim 44, wherein the personalization unit is connected between the database and the controller.

47. (New) The computer system according to claim 32, further comprising means for updating the data speech constructs, wherein the means for updating operates while the spoken language interface operates.

48. (New) The computer system according to claim 32, further comprising interfaces to a plurality of applications, providing the user with voice access to each application, and an application manager for each application, wherein each application manager comprises an internal representation of the application.

49. (New) The computer system according to claim 48, wherein the application managers are mutually interactive such that activity by a user in one applicatoin may result in activity in another application.

50. (New) The computer system according to claim 32, further comprising a session manager connected to the controller for managing user sessions, the session manager being arranged to monitor a user conversation, whereby if a break in that conversation occurs, the user can be reconnected at the same point in the conversation.

51. (New) The computer system according to claim 50, wherein the break in the user conversation occurs due to an event selected from one of a loss in a connection and a switch of application by the user.

52. (New) The computer system according to claim 32, further comprising a notification manager for notifying the user of preselected events.

53. (New) The computer system according to claim 32, further comprising a location manager for determining a position of the user and for modifying data provided to the user in accordance with the position.

54. (New) The computer system according to claim 32, further comprising an advertising manager for, at the choice of the user, selectively displaying advertisements to the user in accordance with one or more predetermined parameters.

55. (New) The computer system according to claim 32, wherein the voice channel and the at least one non-voice channel are provided by one device.

56. (New) The computer system according to claim 32, wherein the voice channel and the at least one non-voice channel are provided by different devices.

57. (New) A method of handling dialogue with a user in a spoken language interface for speech communication with applications running on a computer system, the spoken language interface including an automatic speech recognition system and a speech generation system, the method comprising:

- listening to speech input from a user to detect a phrase indicating that the user wishes to access an application;

- upon detection of the phrase making the phrase current and playing an entry phrase to the user;

- waiting for parameter names with values to be returned by the automatic speech recognition system and representing user input speech;

- matching the user input parameter names with at least one parameter in a parameter set associated with the detected phrase and populating empty parameters with appropriate values from the user input speech;

- checking whether each parameter in the parameter set has a value and, if not, playing to the user a prompt to elicit a response for a next empty parameter; and

- when each parameter in the set has a value, marking the phrase as complete.

58. (New) The method according to claim 57, further comprising, prior to marking a phrase as complete, prompting the user to confirm details given to the computer system.

59. (New) The method according to claim 58, further comprising:

when the user does not confirm the details in the affirmative, asking the user to select a desired parameter value, resetting the desired parameter value to empty; and playing a prompt to elicit a value from the user for the empty parameter value.

60. (New) A computer readable medium comprising executable instructions for handling dialogue with a user in a spoken language interface for speech communication with applications running on a computer system, the spoken language interface including an automatic speech recognition system and a speech generation system, the method comprising:

listening to speech input from a user to detect a phrase indicating that the user wishes to access an application;

upon detection of the phrase making the phrase current and playing an entry phrase to the user;

upon detection of the phrase making the phrase current and playing an entry phrase to the user;

waiting for parameter names with values to be returned by the automatic speech recognition system and representing user input speech;

matching the user input parameter names with at least one parameter in a parameter set associated with the detected phrase and populating empty parameters with appropriate values from the user input speech;

checking whether each parameter in the parameter set has a value and, if not, playing to the user a prompt to elicit a response for a next empty parameter; and

when each parameter in the set has a value, marking the phrase as complete.

61. (New) The computer readable medium according to claim 60, further comprising executable instructions for handling dialogue with a user by, prior to marking a phrase as complete, prompting the user to confirm details given to the computer system.

62. (New) The computer readable medium according to claim 61, further comprising executable instructions for handling dialogue with a user by:

when the user does not confirm the details in the affirmative, asking the user to select a desired parameter value, resetting the desired parameter value to empty; and playing a prompt to elicit a value from the user for the empty parameter value.⁵⁹

63. (New) A computer system for speech communications with one or more applications, comprising:

- an automatic speech recognition system (ASR) for recognizing speech inputs from a user;
- a speech generation system for providing speech to be delivered to the user;
- a database storing data speech constructs configured to carry out a conversation for use by the automatic speech recognition system and the speech generation system, the constructs comprising prompts and grammars stored in notation independent form;
- a controller for controlling the automatic speech recognition system, the speech generation system and the database;
- a voice user interface provided between the user and one or more applications;
- at least one further user interface, the further user interface comprising a non-voice user interface;
- wherein the controller is configured to manage synchronous conversations between the user and the computer system across a voice channel provided by the voice user interface and at least one non-voice channel provided by the at least one further user interface;
- an application design tool comprising a graphical dialogue design and editing screen configured to provide a hierarchical view of speech user interface (SUI) objects, the objects comprising applications, prompts, grammars and phrases;
- a dialogue structure design tool comprising a tools container comprising a library of grammar objects, a text box for entry of text to update or create grammar objects, and a display portion; and
- a dialogue structure design tool.

64. (New) The computer system according to claim 63, further comprising a testing tool for testing grammar structures and testing the computer system.

65. (New) The computer system according to claim 63, further comprising a version and configuration control tool for managing implementation of new or updated applications and dialogue structures into a live environment.